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ABSTRACT

The purpose of this study was to examine the causal relationship between teacher commitment to the school organization and job satisfaction in a model of teacher commitment using longitudinal career ladder data. Two focal measures (commitment and satisfaction) and demographic predictors from 854 teachers were analyzed for this study. Cross-lagged correlation/regression analyses were used to determine the causal ordering of teacher commitment and job satisfaction in time-lagged situations. Data analyses clearly support the hypothesis that commitment is different from satisfaction and that satisfaction has greater causal predominance over commitment, with more predictive power than commitment. The findings indicate that satisfaction is a determinant of commitment. A practical implication of this study is that school administrators need to work on creating teacher job satisfaction before the teacher develops a sense of commitment toward the organization. Forty-three references and four data tables are included. (AMH)

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TEACHER COMMITMENT AND JOB SATISFACTION: WHICH COMES FIRST?

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ABSTRACT

This study examined the causal relationship between teacher commitment to the school organization and job satisfaction in a model of teacher commitment using longitudinal career ladder data. Two focal measures (commitment and satisfaction) and other demographic predictors from 854 school teachers were analyzed for this study. Cross-lagged correlation/regression analyses were used to determine the causal ordering of teacher commitment and satisfaction in time-lagged situations. Results indicate that satisfaction was causally prioritized to teacher commitment in this study. Theoretical and methodological issues regarding this type of study are discussed. Implications for future research are suggested.

Organizational commitment is usually defined as an employee's identification with and involvement in an organization. Individuals are characterized by a sharing of values, a desire to maintain membership, and willingness to exert effort on behalf of the organization (Porter et al., 1974). Such commitment to the organization has been found to correlate with a variety of individual and organization characteristics (Reyes and Shin, 1991; Mowday et al., 1982). Despite the large number of studies that focus on organizational commitment, however, a research issue remains. That is, past research has not empirically established the causal relationships between commitment and those situational characteristics and attitudes presumed to be its antecedents. Among those causal relationships questioned, much attention has been paid to the causal ordering of job satisfaction and organizational commitment. In addition, most research efforts have tended to examine variables from only single individual or organizational predictor at a time. Or researchers have investigated either the predictors of satisfaction or those of commitment, making comparisons impossible between the relative effects on satisfaction and commitment of each predictor studied (Glisson and Durick, 1988). These gaps in the literature suggest that more work is needed to clarify this important relationship between job satisfaction and organizational commitment. The current study then builds on previous work concerning this relationship and improves it by using a couple of strategies. For example, this study, unlike others, collects data on both variables from similar individuals over two time periods. Moreover the current study uses a combination of techniques, cross-lagged along with regression analysis (as suggested by Rogosa,

1980) in order to overcome the limitations that other studies recognized when using only cross-lagged analysis as a technique. We believe that these strategies will provide us with more meaningful information to understand such a complex relationship. Thus, the findings of our study would help us have a better theoretical knowledge of both concepts and advance our understanding about the school as a workplace.

With that in mind, the purpose of this study is to clarify the causal relationship between teacher organizational commitment and job satisfaction.

Theoretical Background

As research has shown (Williams & Hazer, 1986; Brooke et al., 1988: Mowday, Porter & Steers, 1982), commitment is distinguished from job satisfaction in that the former is defined as an effective response to beliefs about the organization and the latter as a positive emotional response to the appraisal of specific job tasks or experiences. "Hence, commitment emphasizes attachment to the employing organization, including its goals and values, while satisfaction emphasizes the specific task environment where an employee performs his or her duties" (Mowday, Steers, & Porter, 1979), even though the two constructs would be expected to be highly correlated within a given sample.

To date, research on the relationship between commitment and satisfaction has been couched within two conflicting traditions. The first perspective is based on theories of need satisfaction (e.g., Alderfer, 1972), exchange (e.g., March & Simon, 1958), and side bets (Becker, 1960) explaining that employees are more favorably disposed to the organization and more likely to remain and contribute to its success, when they encounter work conditions that satisfy their basic needs. Therefore, job satisfaction as a kind of work experience is considered to be an attitudinal cause of commitment (Bluedorn, 1982). On the other hand, the second perspective has challenged the former by arguing that perceptions of the work environment are shaped by existing attitudes or

prior behavior. More specifically, based upon principles derived from cognitive dissonance (Festinger, 1957), behavioral commitment (Kiesler, 1971), and self-perception (Bem, 1972), theories indicate that, for employees who seek to maintain consistency among their attitudes, perceptions and behavior, commitment to a course of action may determine subsequent attitudes such as satisfaction (Salancik & Pfeffer, 1978).

These two views are deeply connected with Staw's (1980) concepts, prospective rationalization and retrospective rationalization, respectively (See also Meyer & Allen, 1988). On the other hand, Mowday et al. (1982) suggested that both processes may operate together; satisfaction (work experience) and commitment may affect one another in an ongoing reciprocal process. Given this confusion, we decided to test this relationship with a methodology designed to test the ordering of variables and to overcome the limitations exhibited in previous studies that tested the causal relationship between these two variables. If the variables fail to achieve any significance and given the precautions taken in this study, then we may concur with Mowday et al. (1980). Otherwise, this study may contribute to clarify the ordering of this relationship.

Research Problem

Most research on organizational commitment and job satisfaction has focused on topics relevant to establishing some relationships between the two constructs and to identifying their antecedents and consequences in a variety of organizational settings. Despite these studies, there is continued disagreement regarding any causal ordering.

Many early studies reported that organizational commitment and job satisfaction are correlated, but no causal relationship has been reported in several turnover models (e.g., Porter et al. 1974; Mobley, 1977; Steers & Mowday, 1981). The variables have kept parallel, but independent relations even in causal relationship studies between commitment and those situational attitudes and variables presumed to be antecedents. Other research efforts to identify the relationship between commitment and satisfaction have been criticized because of empirically misspecified causal relationships (e.g., Marsh & Mannari, 1977; Steers, 1977; Stevens et al.,

1978; Price & Mueller, 1981; Bluedorn, 1982; Bateman & Strasser, 1984; Curry et al., 1986; Williams & Hazer, 1986; Farkas & Tetrick, 1989). Despite these efforts, however, the findings currently indicate that (1) job satisfaction is a cause of commitment (e.g., Steers, 1977; Stevens et al., 1978; Williams & Hazer, 1986; Farkas & Tetrick, 1989, and (2) commitment is a cause of job satisfaction (e.g., Weiner & Vardi, 1980; Bateman & Strasser, 1984).

Such conflicting findings elicit a number of research issues that remain unsolved. First, a variety of organizational research including commitment and satisfaction still has not specified their causal relationships, even in causal models. If the two constructs are causally ordered, then studies which omit their causal relationships may have employed misspecified models. In addition, if analysts simply treat the constructs as simultaneous yet separate determinants of such outcomes as turnover and effectiveness or performance, they may overlook the total causal effects-- both direct and indirect effects. Second, researchers have relied on explanations derived from Porter et al.'s attitudinal commitment perspective to justify presumed causal linkages from employee characteristics and work experiences including satisfaction and organizational commitment. When the validity of this perspective is not altogether clear, however, a viable alternative perspective, behavioral commitment (Salancik & Pfeffer, 1978) suggests that commitment to an organization may be a cause rather than a result of job satisfaction (Bateman & Strasser, 1984). From these conflicting points of view it seems likely that more longitudinal empirical studies aimed at specifying the causal ordering of commitment and satisfaction are required.

Third, there has been no cure-all methodology for assessing causal relationships; several statistical techniques have been used, among them structural equation modeling, path analysis, and cross-lagged panel analysis. However, some methodological issues remain unanswered, though recent studies tend to agree that longitudinal empirical assessments for establishing causality are requisite. Most studies have used multiple regression analysis and path analysis techniques for causal specification, but those techniques did not take into account measurement error (Farkas & Tetrick, 1989). Similarly, Curry et al. (1986) criticize that conventional least-squares regressions,

albeit within the context of a cross-lagged longitudinal model, cause correlated errors and unreliability in measures thus providing different estimates of causal effects. As a result, the findings from those studies showed serious bias and failed to examine an appropriate satisfaction-commitment relation.

Lastly, research findings differ when different organizational models are used. The influence of work experiences might be greater when employees' tenure with the organization is lower and when commitment is in the process of development (Meyer & Allen, 1988). This reflects that causal effects of work experiences on commitment may be, in part , a function of the length of tenure of employees. In addition, research findings cannot be generalized across a variety of organizational settings, which could be an impediment against replication of the findings.

Consequently, these disagreements on reanalysis for a model building illuminate that replication and causation are the essence of social science. Future research on the topic could approach to fault-free findings by methodological refinement that minimizes a variety of uncommon errors, cross-organizational samples, and time-space restrictions (i.e., time-degree of employee's work experience, space-organizational setting). In order to start cross-validation over theoretical perspectives, samples from different kinds of organizations and different theoretical perspectives are needed. In this study, we use a model of teacher commitment to the workplace.

Teacher Commitment Model

The research on teacher commitment in educational organizations is limited and unsystematic. No coherent series of studies exist attempting to uncover the theoretical foundations of teacher commitment. Available only is a series of studies that use different frameworks, which contribute to the overall confusion concerning teacher commitment (Reyes, 1990). However, there are some studies suggesting some of the antecedents of employee commitment to schools as organization. Some implications can be also inferred from the research on commitment in other organizations.

The concept of organizational commitment has received increased attention for the last decades as a potential determinant of employee performance, absenteeism, turnover, and effectiveness. Recently, Reyes and Shin (1990) in their meta-analytic research suggest that organizational commitment has consistent impact on employee performance, absenteeism, and turnover across organizational settings. Rosenholtz (1989) also found that teacher commitment was a predictor of both student reading and math achievement. Hoy et al. (1990) regarded teacher commitment as an index of school effectiveness. Assuredly, if principals are successful in making their schools effective, teachers are expected to feel a sense of belongingness and loyalty to their schools. Thus, schools need to foster both social bonds of the teacher to the school and mechanisms necessary to develop and maintain patterns of teacher integration and commitment to the school. A model has been proposed in the literature on organizational commitment (Weiner, 1982; Luthans et al., 1987; Reyes, 1990; Reyes and Shin, 1990). This model is presented in Figure 1.

This model assumes the following. First, personal-demographic variables correlate with organizational commitment (Salanick, 1977; Weiner, 1982; Reyes, 1990). The demographic variables used in this study were age, education, organizational tenure, sex, and position. Besides the personal-demographic antecedents, organizational antecedents are also important in explaining commitment (Salancik, 1977; Luthans et al., 1986; Reyes, 1990). This study limited organizational variables to organizational level and size. According to the model shown in Figure 1, the organizational and personal-demographic variables interact at first when the teacher joins a particular school. When the person-organization fit is strong, the individual's socialization will lead to specific beliefs, attitudes, and behaviors that will enhance his/her commitment to school and job satisfaction (Reyes, 1990).

Insert Figure 1 about here

In the present study, we partially tested this model. First, we examined the causal link between job satisfaction and organizational commitment using structural cross-lagged correlation/regression analyses of longitudinal data. Secondly, we compared the predictors regressed on commitment and satisfaction to assess the extent to which predictors account for each of the two constructs. The concepts of person-organization fit and socialization, although important, were not part of this study.

METHOD

Sample and Data Collection Procedures

This study was carried out in a midwestern state using survey research. This study was originally designed as a comparative study of faculty morale, organizational commitment, and job satisfaction in teacher career ladder group and non-career ladder group. It included the impact of personal and organizational predictors on faculty morale, commitment, and job satisfaction. Data were collected from teachers, counselors, librarians, and other personnel in career ladder systems and non-career ladder systems over two consecutive years:
1987 (T_1) and 1988 (T_2). The non-career ladder teacher data were not used in this study.

Questionnaires were originally distributed to 500 teachers and school employees in participating in a career ladder system in year one. Again in year two, 500 teachers participating in career ladder system were surveyed. For both years participants were asked to complete the questionnaire on their own time. The questionnaires were coded to identify the subjects for a second time. The questionnaire includes demographic information and three standardized measures (morale, teacher commitment and job satisfaction).

Thus, the population for this study was conducted with 1000 target teacher participants in the first and the second years of a career ladder system. They were selected at random from 20 small and 20 medium-sized school districts. A total of 856 (85.6%) participants returned usable questionnaires at both times: 372 at T_1 and 484 at T_2. Because of system wide deletion, the

respondents at T_1 and T_2 were reduced to a final sample size of 195. That is, 195 from T_1 were matched with 195 from T_2. This final sample was used in the cross-lagged correlation/regression analyses.

Measures

The questionnaires measured 9 variables. The focal research variables were job satisfaction and teacher commitment. The other 7 variables included 5 demographic and 2 organization-related antecedents.

Teacher commitment was measured using the 15-item Organizational Commitment Questionnaire (OCQ: Porter et al., 1974). The OCQ most closely operationalizes the definition of 'teacher commitment to the school' used in this study. This measure uses a 6-point (T_2) or 7-point (T_1) Likert-type response format (strongly disagree-strongly agree). Scale scores were computed by averaging across items. The OCQ is the most widely used measure of organizational commitment and has been shown to have acceptable psychometric properties (Mowday et al., 1979). In present study, its internal consistency reliabilities (alpha) were .87 at T_1 and .89 at T_2.

Job Satisfaction was assessed using the 20-item short form of the Minnesota Satisfaction Questionnaire (MSQ) with a 5-point scale. The MSQ is a popular measure with thoroughly investigated convergent validity with other measures of job satisfaction and high reliability (Weiss et al., 1967). In present study, the alphas were .90 at T_1 and .91 at T_2.

Demographic variables included age, sex, tenure (total years of experience), education level, and position. They were recorded from five single-item self-report responses. For data analysis, sex was recorded as male=1 and female=2; position as teacher=1 and the other school personnel=2; education level as Bachelor's degree (1), Master's (2), and Doctorate (3).

Organizational Variables contained district sites and school level. They were also recorded from two single-item self-response formats. For data analysis, the school level variable was coded

as elementary (1) and secondary (2) and district size was grouped as small (1) for less than 800, and medium (2) for 801-5,000.

Data Analytic Procedures

Analytic procedures for this study proceeded with two steps: (1) the identification and comparison of predictors regressed by teacher commitment and satisfaction as the dependent variables in a model of teacher commitment, and (2) the assessment of causation between commitment and satisfaction over two years.

First, multiple regression analyses were employed as a test of the predictive power of the variables presumed to be antecedents to commitment and satisfaction. This basic approach, which indicates the relative importance of predictors when the others are statistically controlled for, typifies the approach taken in the empirical tests of commitment models (Marsh and Mannari, 1977; Steers, 1977; Angle and Perry, 1983). In the present study, two multiple regression analyses were used for the dependent variables, commitment and satisfaction, across years. Some significant predictors were then identified and explained for comparison by the construct.

To assess causation between job satisfaction and teacher commitment, two steps were followed (Kenny, 1975; Rogosa, 1980). Initially, the relationships between the constructs were analyzed using six correlations: two synchronous correlations for T_1 and T_2 (r_{c1s1} and r_{c2s2}), two autocorrelations (r_{c1c2} and r_{s1s2}), and two cross-lagged correlations (r_{c1s2} r_{s1c2}) using cross-legged panel correlations. Before the cross-legged correlations can be compared to identify causal predominance, the assumptions of synchronocity (both variables measured concurrently at each time) stationarity (the same causal relationship is present at the two points of measurement) and stability (when measuring variables at two points in time, some change must occur in one of the variables in order to determine causal association) must be satisfied (Kenny and Harackiewicz, 1979).

The three conditions along with the reliability of instruments condition were met in this study. If the assumptions are met, then two cross-lagged correlations are compared. If the correlations are equal ($r_{c1s2} = r_{s1c2}$), causality is indeterminant. If they are not equal, a time-lagged

effect is indicated. If $r_{c1s2}>r_{s1c2}$, variable C (commitment) may be inferred to cause variable S (satisfaction), whereas if $r_{s1c2}>r_{c1s2}$, variable S may be inferred to cause variable C. A caution in this test is that in order to enhance the chance of significant differences in cross-lagged correlations, it is desirable to have moderate to large ($r \geq .30$) synchronous correlations and a moderately large sample size ($N \geq 75$) (Kenny, 1975; Kenny & Harackiewiicz, 1979). If these assumptions are not met, differences in cross-lagged correlations will not be statistically significant because the test of the differences is of low power. However, the tests of causal analysis and spriousness are typically conducted by statistical correction and comparisons of the magnitudes of the cross-lagged correlations (Kenny, 1975).

Rogosa (1980) criticized cross-lagged analysis because of its inappropriate procedures for the analysis of longitudinal panel data and unsound basis for causal analysis. For this reason, this study also used a structural regression model, named **cross-lagged regression analysis**. For example, the causal influence from C to S is represented by the regression parameter of the path from C at T_1 to S at T_2. Likewise, the causal influence from S to C is represented by the regression parameters of the path from prior S to a subsequent C. The specific regression equations are as follows:

$$C_2=b_0+\mathcal{B}_1 c_1+r_2 s_1+u$$

$$S_2=r_0+\mathcal{B}_2 c_1+r_1 s_1+v$$

where the parameters, $\mathcal{B}_1$ and r_1, represent the time-lagged influence of a variable on itself, and $\mathcal{B}_2$ and r_2 represent the time-lagged causal effects between X and Y (Rogosa, 1980). When the usual assumptions of regression models are met, a nonzero value of a relevant parameter is of a significant causal effect. Significant nonzero values of both cross-lagged regression parameters indicate reciprocal causation.

Essentially, then, the time-lagged explanatory power of a potentially causal variable is determined only after the dependent variable's influence upon itself at T_1 is first controlled for (Bateman and Strasser, 1984). An additional asset to analyzing the data over two time periods is that some of the method variance due to a single collection and self-report data is removed.

However, we should point out that these analytical procedures do not ultimately prove causality, although confidence in making causal inferences is substantially strengthened if one of the pertinent regression parameters is significant.

RESULTS

To assess the causal priority of teacher commitment and job satisfaction in a model of commitment, two preliminary analyses were done: descriptive analysis and multiple regression analyses. Then the main analysis was done for the assessment of the causal priority: cross-lagged panel correlation/regression analysis.

Preliminary Analysis

Table 1 presents the means, standard deviations, and reliabilities of variables used in the study. The means and standard deviations for the focal variables, commitment and satisfaction, were relatively stable over time. These variables were assessed by reliable measures as in other studies. Demographic and organizational independent variables rely on existing facts for each participant so those variables did not need to be assessed at both years. Therefore they were assessed only at T_1.

INSERT TABLE 1 ABOUT HERE

Table 2 shows the synchronous zero-order correlation matrix for all variables reported in Table 1 at T_1 and T_2. Several significant correlations between independent variables and dependent variables were found, but relatively low. With this we can predict a small R^2 as will be seen in multiple regression analysis. However, the coefficients of correlations between the two focal variables are relatively high (.63's). It doesn't necessarily mean that multicollinearity is a problem in doing multiple regression analyses with the total sample in this study. These variables were expected to be correlated to some degree because they measure separate but interrelated concepts.

INSERT TABLE 2 ABOUT HERE

Table 3 displays multiple regression analyses on teacher commitment and job satisfaction across time. The analyses were employed to identify and compare predictors and their power to explain commitment and satisfaction, respectively, in a model of teacher commitment. The analyses were separately done using one of the focal variables as an independent variable with the other demographic and organizational variables, and in having both as dependent variables.

INSERT TABLE 3 ABOUT HERE

The latter indicates that satisfaction has school level (Beta=-.11,p<.01) and position (Beta=.10,p<.05) variables as significant predictors, while commitment has school level (Beta = -.20,p<.01) and district size (Beta=-.13,p<.01) variables as significant predictors. Thus teacher commitment and satisfaction were found to have different predictors, in this sample, which would be considered in the process of developing commitment and satisfaction. In this analysis, teacher commitment was more dependent upon organizational variables, while satisfaction was not.

This fact that the focal variables have their own predictors was also supported as we introduced one of the focal variables as an independent variable. As can be seen in Table 3 (values in parantheses), satisfaction appeared to have position (Beta=.08, p<.01) and commitment (Beta=.62, p<.01) variables as significant predictors, whereas commitment has school level (Beta=.12,p<.01), size (Beta = .08, p<.01), sex (Beta = .09, p<.01), education (Beta = -.12, p<.01), and satisfaction (Beta=.61,p<.01) variables. The reason why commitment or satisfaction has different predictors in both regression approaches can be explained by common method variance between the two measures. That is, when an independent variable that has high correlation with a dependent variable is entered into a regression equation, the former takes large variance in the equation, which also affects the other independent variables (Cohen and

Cohen, 1983). In this case, we have to check if any multicollinearity problem exists in the equation.

On the other hand, the R^2's are more problematic here. Whether one of the focal variables is considered a predictor makes big differences in both regression approaches. That is, the regressions that consider one of the two predictors produced large R^2s, .43 for commitment and .40 for satisfaction, whereas the counterparts have only .06 for commitment and .02 for satisfaction. This represents a typical example of common method variance. Especially, low predictive explanatory powers seem to be caused by common problems when demographic and organizational variables are composed of existing facts and are taken as predictors of commitment or satisfaction. Until this time, there have not been consistent research findings on which independent variables (demographic and organizational) are good predictors of commitment and job satisfaction, even though researchers usually categorize them as one of predictor groups for commitment and satisfaction (Glisson and Durick, 1988; Mowday et al., 1982).

As a result, commitment and satisfaction are moderately correlated but separate concepts as shown in most research efforts that conceptualize them separate, especially in turnover models or commitment models. These efforts have been supported in the literature review and in preliminary analysis of this study. Next, we specify the causal ordering of the two focal variables in a model of teacher commitment.

Cross-lagged Correlation/Regression Analysis

Cross-lagged panel correlation/regression analyses were employed to assess the causal priority of teacher commitment and job satisfaction in a teacher commitment model. Table 4 displays various cross-correlational methods and standardized cross-lagged regression parameters in order to test the causal priority.

INSERT TABLE 4 ABOUT HERE

Relatively high autocorrelations evidenced that both commitment and satisfaction are stable measures (test-retest reliabilities) as have been reported in other studies. The assumptions of synchronocity (both variables measured concurrently at each time) and stationarity (the same structural equation being used at each time; $r_{c1s1} = r_{c2s2}$) are both satisfied. The cross-lagged correlation between satisfaction at T_1 and commitment at T_2 (r_{s1c2} =.54) appeared to be significantly higher than the correlation between commitment at T_1 and satisfaction at T_2 (r=.40), while both show significant correlations ($p<.01$). Certainly, the cross-lagged correlation differential between r_{s1c2} and r_{c1c2} was significant ($p<.05$). This permits us to infer that satisfaction may be a precursor of teacher organizational commitment, at least in this analysis. This relationship can be represented and straightforwardly interpreted as follows (see Figure 2).

Insert Figure 2 about here

The possibility that satisfaction is an antecedent of commitment in this analysis was enhanced by moderately high synchronous correlations and large sample size (Kenny, 1975). But, results for this type of research have varied, depending on research characteristics. For one thing, this study satisfied relatively well all the assumptions and preconditions so that we can make the statement of which one comes first in this proposed model. On the other hand, we cannot also rule out the possibility of a reciprocal influence between the two because r_{c1s2} and r_{s1c2} have moderate coefficients, respectively.

Rogosa's criticisms over cross-lagged panel correlation techniques (1980) suggest to us do cross-lagged regression analyses in this study. Under the usual assumptions of linear regression analysis, the influence of one variable on the other is represented by non-zero values for the relevant cross-lagged regression parameter in standardized ways. This analysis permits the detection of influence of one or both variables on the other overtime (Meyer and Allen, 1987).

Standardized regression parameters representing cross-lagged regression effects of independent variables including satisfaction at T_1 on commitment at T_2 (r_{c2s1}) are very low except for the satisfaction variable at T_1 (Beta=.33;p<.01). The low beta coefficient along with demographic and organizational variables were already expected (see preliminary analysis). On the other hand, standardized regression coefficients on job satisfaction were the same as those on commitment, even showing no significant parameters and even lower time-lagged explanatory power of independent variables including commitment (R^2=.11 see table 4 last two columns).

These results strongly support the findings of cross-lagged correlation analysis. That is, by showing r_{c2s1} significant and b_{s2c1} non-significant (Beta=.14; n.s.) and after controlling for each dependent variable's influence on itself at T_1 the finding that satisfaction's causal predominance over commitment is also backed by the cross-lagged regression analyses. Despite the results of the causal priority, these procedures cannot be taken as proof of ultimate causality given such a short period study and limited sample. The results just provide more confidence in making causal inference as Bateman and Strasser (1984) suggest.

DISCUSSION

The results of this longitudinal panel study address two main issues: (1) Are commitment and satisfaction differentiated as having their own antecedents in a commitment model? (2) Is there any causal ordering of commitment and satisfaction in the model?

Multiple regression analyses clearly support that commitment is different from satisfaction and they have their own antecedents, though predictive powers of the antecedents are fairly low on both commitment and satisfaction. As noted earlier, these findings are consistent with other research findings.

More importantly, the results of cross-lagged correlation/regression analyses provide strong support for question (2). Especially, the cross-lagged regression results support the causal predominance of satisfaction over commitment with more predictive power (R^2=.25) than commitment. This indicates that satisfaction is a determinant of commitment, a commonly held

position among theorists with attitudinal views of commitment. Despite this finding, recent research findings on this topic have varied depending upon samples and methods adopted.

Bateman and Strasser (1984), who support the behavioral commitment view, found the causal priority of commitment over satisfaction in their cross-lagged correlation/regression analysis on nurse sample. The results of their initial time-lagged regression analyses indicated a relative inability to predict commitment with variables including satisfaction as a work experience variable, suggesting that the theoretical causal presumptions behind the set of predictor variables may be invalid. On the other hand, Curry et al. (1986), did not support the causal priority of commitment over satisfaction in their replication study (using LISREL, and the same population, measures, and analytic method as those designed by Bateman and Strasser). Instead they showed no causal relationship between commitment and satisfaction, raising potential explanations for the differences in the findings of the two studies: different geographical areas and slightly different measures employed.

In contrast, Williams and Hazer (1986) maintained in their cross-sectional study that satisfaction could be considered as a causal factor contributing to commitment. On the other hand, more recently, Meyer and Allen (1987; 1988) in their extensive panel regression analyses over multiple time-lags found that the influence of satisfaction (work experiences) on commitment during the first year to employment. At the same time, they noted that the failure of Bateman and Strasser (1984) and Curry et al. (1986) to find such an effect may have been due to the length of tenure in their samples. Thus they proposed that the influence of satisfaction (work experience) appears to be stronger when new employees are examined. Most recently, Farkas and Tetrick (1989), who employed the same design as Williams and Hazer's multi-wave longitudinal analysis of the causal ordering, only partially supported the findings of Williams and Hazer (1986). They found that satisfaction and commitment, at least during the developmental phase, may be reciprocally related.

Obviously, research on this topic has made progress methodologically over the years but it has also increased the state of chaos in terms of findings. Most studies have produced contra-

dicting voices by adopting their own sample and techniques, even by adopting replicated designs. Though most studies have their own unique strengths, they also contain some weaknesses in their research designs. Our study, however, helps restore some order in this area. The research design, the elimination of non-compatible data, and the statistical techniques used to analyze the data give us enough confidence to state that teacher job satisfaction is a precursor of teacher organizational commitment.

These findings have some theoretical and practical implications. First, the ordering of the variables is quite clear in the study. This suggests the claim of reciprocity between variables may be questioned. There is not a reciprocal relationship between job satisfaction and organizational commitment. It appears that job satisfaction must be present before the individual develops organizational commitment. This claim has been supported in the literature by several researchers such as Becker (1960) and Bluedorn, 1982) among others. Moreover, the current findings reject Mowday et al.'s (1982) claim concerning the reciprocal nature of the two variables.

Second, the findings also have practical implications. It is clear that school administrators need to work on creating teacher job satisfaction before the teacher develops a sense of commitment towards the organization. Thus, strategies need to be developed that encourage job satisfaction. For example, school administrators may provide teachers with release time to study new ways to deliver instruction. Or the administrator may encourage teacher participation in redesigning a teaching job. These strategies seem to be effective in increasing teacher job satisfaction (Hart, 1991; Reyes, 1990; and Rosenholtz, 1989).

Finally, this study has implications for further research. First, research needs more multi-lagged integrating past research longitudinal designs over relatively longer periods (more than one year). Most research limited designs to two time-lagged within one year. These designs could be fatal in making the results more generalizable. Second, good techniques and various samples should be mobilized in this type of research. Statistical techniques are enough to counter a variety of errors occurred in designs. And samples should be larger and diverse to make sure that the

results are generalized and ensure that covariances are estimated as those in the population. Most research has failed in constituting robust sampling plans.

Second, research should be done in the process of specifying an organizational model. In specifying organizational models in dynamic settings (i.e., turnover model or commitment model) in dynamic settings, we should be cautious about important omitted variables that affect the parameters of predictors, especially in making causal specifications among predictors. In other words, we cannot assess the causal ordering of commitment and satisfaction only, excluding the other significant variables in a model. Also, any relationship between commitment and satisfaction could be attempted, causal or reciprocal, or even no causal. We should not rule out any possibility of the relationship. Therefore, various causal specifications in a model would be preferred. When these weaknesses are corrected and improved and requirements are met, the research findings in this area would be more stable, reliable, and valid enough to become a solid theory.

The current study using longitudinal teacher panel data, as in the other studies, has some strengths and weaknesses. Long panel, large sample size, and a relatively new model would be assets for this study, whereas controlling error terms, less causal specifications of the model, and using only fact-bounded independent variables would be weak points in this study. Practically speaking, this study paid attention to the development of teacher commitment. This will be significantly desirable considering the resurgence of studies on teacher commitment in the education field, specifically in creating new organizational designs of schools (Rowan, 1990), providing sociological perspectives of teacher commitment (Rosenholz, 1989), and developing a model of teacher commitment model (Reyes, 1990). Taking as an example a finding of this study, it may be possible to develop indirectly commitment through a strategy that increases job satisfaction. However, if the reverse causal ordering is true, and a school administrator is unaware of this, the same intervention strategy may not be effective.

The proposed commitment model could be extended not only to specifying causal relationships among variables including more significant predictors other than demographic

variables, but also to containing outcome variables of teacher commitment. Teacher commitment as a strong belief in and acceptance of the school's goals and values must be an important factor influencing teacher absenteeism, burnout, turnover, performance, and productivity (Reyes, 1990). In this respect this study has potential in exploring more specific teacher commitment models and in helping administrators develop strategies to deal effectively with school organizations and fostering teacher commitment.

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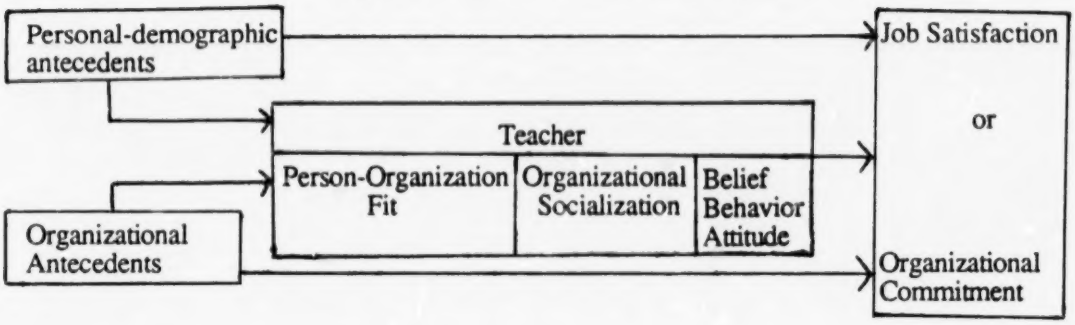
Figure 1. A Model of Teacher Commitment



Note: Adapted from Reyes (1990)

Figure 2. Cross-lagged Correlation Analysis: Commitment and Satisfaction

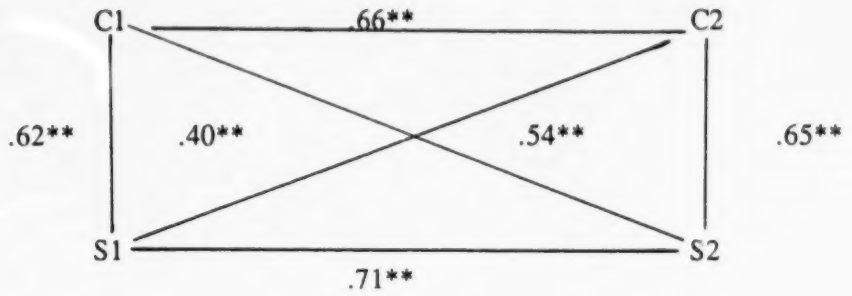


Table 1

Descriptive Statistics of Research Variables

Variables	*1987 (T1) Means	Standard Deviations	Reliabilities	**1988 (T2) Means	Standard Deviations	Reliabilities
Dependent						
Commitment	73.70	14.45	.87	69.35	12.04	.89
Satisfaction	74.26	12.18	.90	73.68	11.33	.91
Demographic						
Age	41.68	8.34				
Sex						
Tenure	15.66	6.34				
Education						
Position						
Organizational						
Size	1.84	.70				
Level	1.39	.49				

*N=198
**N=198

Table 2

Correlation Matrix among Research Variables by Year

1987 (T1)a)

Variables	1	2	3	4	5	6	7	8	9
1. Level		.04	.09	-.37**	.03	-.02	.06	-.12	.01
2. Size	-.03		.21*	-.01	.14	.21*	.09	-.00	.01
3. Tenure	-.14	.05		-.07	.71**	.11	.18*	.06	.14
4. Sex	-.45**	.03	.02		.02	-.12	-.08	.15	-.03
5. Age	-.19**	.07	.74**	.04		-.02	.04	.14	.19*
6.Education	-.07	.12*	.11	-.04	.02		.18*	-.21*	-.08
7. Position	.03	.06	.03	-.05	.03	.11		.06	.15
8. Commitment	-.20**	-.13*	.06	.16**	.04	-.11*	.02		.63**
9. Satisfaction	-.15**	-.05	.01	.08	.03	-.02	.08	.63**	

1988 (T2)b)

Note: One-tailed test of Statistical Significance
a) N=198
b) N=198

*p<.05, **p<.01

Table 3

Multiple Regressions Predicting Teacher Commitment and Job Satisfaction Across Time

	Teacher Commitment			Job Satisfaction		
Independent Variables	Beta	SE	F	Beta	SE	F
Level	-.20 (-.07)	.05 (.03)	18.02** (3.87*)	-.11 (.00)	.04	7.13**
Size	-.13 (.08)	.05 (.03)	8.22** (7.34**)	.00 (-.04)	-	-
Tenure	.04 (.03)	-	-	.04 (-.01)	-	-
Sex	.10 (.09)	(.03)	(7.74**)	.01 (-.05)	-	-
Age	.02 (.01)	-	-	.07 (.03)	-	-
Education	-.09 (-.12)	(.03)	(14.28**)	-.05 (.04)		
Position	.03 (-.02)	-	-	.10 (.08)	.04 (.03)	6.27* (7.11**)
Commitment	-	-	-	- (.62)	- (.03)	- (405.81**)
Satisfaction	- (.61)	- (.03)	- (401.36**)	-	-	-
R^2	.06	(.43)		.02	(.40)	

Note: Values in parantheses are those obtained when entering either commitment or satisfaction as an independent variable into each regression equation. This analysis was done on all sample respondents at both T_1 and T_2.

N=856

*p≤.05 **p≤.01

Table 4

Cross-lagged Correlation and Regression Analysis for Commitment and Satisfaction

	Autocorrelations		Synchronous Correlations		Cross-lagged Correlations		Standardized Cross-lagged Regression Parameters a)	
Variables	rc1c2	rs1s2	rc1s1	rc2s2	rc1s2	rs1c2	βs2c1 b)	πc2s1 c)
Commitment(c)	.66**	.71**	.62**	.65**	.40**	.54**	.14	-
Satisfaction(s)							-	.33**
Level							-.06	-.05
Size							-.04	.06
Tenure							.03	.03
Sex							-.02	.04
Age							.04	.01
Education							-.03	-.09
Position							.05	.02
R^2							.11	.25

a) Two-tailed tests of statistical significance
b) S2 was regressed on c1 and the other independent variables at T1.
c) C2 was regressed on S1 and the other independent variables at T1.

N=195
*p≤.05, **p≤.01